

Bottom Ash Data

2019 Week 49

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on December 17, 2019. The data represents bottom ash composite results for week 49 of 2019 (December 1, 2019 to December 7, 2019).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for disposal.



CERTIFICATE OF ANALYSIS

Work Order : **VA19A0467**
Client : **Covanta Burnaby R.E., ULC**
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : Weekly Bottom Ash - Suite
PO : VANCO-0000048466
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer
No. of samples received : 12
No. of samples analysed : 12

Page : 1 of 11
Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 10-Dec-2019 12:15
Date Analysis Commenced : 12-Dec-2019
Issue Date : 17-Dec-2019 11:05

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| <i>Signatories</i> | <i>Position</i> | <i>Laboratory Department</i> |
|--------------------|---|-------------------------------------|
| Aaron Yu | Lab Assistant | Metals, Burnaby, British Columbia |
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Brieanna Allen | Department Manager - Organics | Organics, Burnaby, British Columbia |
| Cristina Alexandre | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Evan Ben-Oliel | Metal Analyst | Metals, Burnaby, British Columbia |
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| Robin Weeks | Team Leader - Metals | Metals, Burnaby, British Columbia |



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| <i>Unit</i> | <i>Description</i> |
|-------------|-------------------------|
| % | percent |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.



Analytical Results

| Sub-Matrix: Soil | | | | | Client sample ID | BA1949-A-1 | BA1949-A-2 | BA1949-A-3 | BA1949-A-4 | BA1949-A-5 |
|-----------------------|------------|--------|--------|----------|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil) | | | | | Client sampling date / time | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-001 | VA19A0467-002 | VA19A0467-003 | VA19A0467-004 | VA19A0467-005 | |
| | | | | | Result | Result | Result | Result | Result | |
| Physical Tests | | | | | | | | | | |
| moisture | ---- | E144 | 0.25 | % | 21.8 | 22.5 | 22.4 | 21.2 | 21.6 | |
| pH (1:2 soil:water) | ---- | E108 | 0.10 | pH units | 10.6 | 10.7 | 10.8 | 10.9 | 10.8 | |
| Metals | | | | | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | 30400 | 32700 | 34200 | 33700 | 36100 | |
| antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 155 | 162 | 159 | 153 | 130 | |
| arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 30.6 | 38.6 | 27.2 | 28.0 | 23.0 | |
| barium | 7440-39-3 | E440 | 0.50 | mg/kg | 528 | 551 | 510 | 510 | 538 | |
| beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.48 | 0.42 | 0.41 | 0.88 | 0.42 | |
| bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 6.76 | 6.74 | 7.65 | 9.41 | 10.2 | |
| boron | 7440-42-8 | E440 | 5.0 | mg/kg | 462 | 888 | 275 | 291 | 318 | |
| cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 11.9 | 11.7 | 11.7 | 11.4 | 14.4 | |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 140000 | 136000 | 145000 | 149000 | 134000 | |
| chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 176 | 155 | 241 | 244 | 272 | |
| cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 63.6 | 67.9 | 28.1 | 52.4 | 34.8 | |
| copper | 7440-50-8 | E440 | 0.50 | mg/kg | 14000 | 4880 | 3540 | 9300 | 2480 | |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 86700 | 75200 | 81400 | 85000 | 68400 | |
| lead | 7439-92-1 | E440 | 0.50 | mg/kg | 5320 | 518 | 495 | 565 | 499 | |
| lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 19.2 | 25.6 | 20.7 | 24.3 | 19.3 | |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 11800 | 13000 | 12900 | 12500 | 11300 | |
| manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 1060 | 1060 | 1110 | 1150 | 1440 | |
| mercury | 7439-97-6 | E510 | 0.0500 | mg/kg | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | |
| molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 34.0 | 80.6 | 40.0 | 44.2 | 41.8 | |
| nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 176 | 672 | 225 | 140 | 132 | |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 10300 | 10200 | 11400 | 11600 | 11400 | |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | 5170 | 5460 | 5520 | 5950 | 5380 | |
| selenium | 7782-49-2 | E440 | 0.20 | mg/kg | 0.34 | 0.36 | 0.30 | 0.37 | 0.30 | |
| silver | 7440-22-4 | E440 | 0.10 | mg/kg | 5.96 | 5.00 | 4.84 | 6.84 | 5.42 | |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | 16700 | 17700 | 16800 | 17600 | 16200 | |
| strontium | 7440-24-6 | E440 | 0.50 | mg/kg | 338 | 309 | 351 | 339 | 304 | |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | 13900 | 13900 | 14400 | 15200 | 12600 | |



Analytical Results

| Sub-Matrix: Soil | | | | | Client sample ID | | | | |
|-----------------------------------|------------|--------|-------|----------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (Matrix: Soil) | | | | | BA1949-A-1 | BA1949-A-2 | BA1949-A-3 | BA1949-A-4 | BA1949-A-5 |
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-001 | VA19A0467-002 | VA19A0467-003 | VA19A0467-004 | VA19A0467-005 |
| | | | | | Result | Result | Result | Result | Result |
| Metals | | | | | | | | | |
| thallium | 7440-28-0 | E440 | 0.050 | mg/kg | 0.050 | <0.050 | 0.052 | <0.050 | <0.050 |
| tin | 7440-31-5 | E440 | 2.0 | mg/kg | 149 | 163 | 148 | 266 | 115 |
| titanium | 7440-32-6 | E440 | 1.0 | mg/kg | 524 | 512 | 312 | 335 | 386 |
| tungsten | 7440-33-7 | E440 | 0.50 | mg/kg | 12.8 | 10.6 | 10.1 | 12.7 | 12.0 |
| uranium | 7440-61-1 | E440 | 0.050 | mg/kg | 5.70 | 5.53 | 5.89 | 6.04 | 5.41 |
| vanadium | 7440-62-2 | E440 | 0.20 | mg/kg | 44.2 | 43.0 | 45.6 | 49.0 | 43.0 |
| zinc | 7440-66-6 | E440 | 2.0 | mg/kg | 6240 | 6310 | 6490 | 5220 | 4940 |
| zirconium | 7440-67-7 | E440 | 1.0 | mg/kg | 1.4 | 1.3 | 1.5 | 1.6 | 1.8 |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | ---- | EPP444 | 0.010 | pH units | 11.2 | 11.3 | 11.3 | 11.4 | 11.3 |
| pH, TCLP 2nd preliminary | ---- | EPP444 | 0.010 | pH units | 9.10 | 9.26 | 9.20 | 9.24 | 9.21 |
| pH, TCLP extraction fluid initial | ---- | EPP444 | 0.010 | pH units | 2.88 | 2.88 | 2.88 | 2.88 | 2.88 |
| pH, TCLP final | ---- | EPP444 | 0.010 | pH units | 6.15 | 5.60 | 6.12 | 6.08 | 6.15 |

Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

| Sub-Matrix: Soil (Matrix: Soil) | | | | | Client sample ID | BA1949-A-6 | BA1949-A-7 | BA1949-A-8 | BA1949-A-9 | BA1949-A-10 |
|------------------------------------|------------|--------|--------|----------|----------------------|----------------------|----------------------|----------------------|----------------------|-------------|
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-006 | VA19A0467-007 | VA19A0467-008 | VA19A0467-009 | VA19A0467-010 | |
| | | | | | Result | Result | Result | Result | Result | |
| Physical Tests | | | | | | | | | | |
| moisture | ---- | E144 | 0.25 | % | 23.0 | 21.5 | 21.1 | 22.5 | 21.3 | |
| pH (1:2 soil:water) | ---- | E108 | 0.10 | pH units | 10.8 | 10.8 | 10.6 | 10.6 | 10.5 | |
| Metals | | | | | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | 32600 | 43200 | 1860 | 1600 | 1960 | |
| antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 133 | 145 | 8.05 | 7.69 | 7.20 | |
| arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 26.7 | 27.3 | 1.48 | 1.42 | 1.46 | |
| barium | 7440-39-3 | E440 | 0.50 | mg/kg | 450 | 524 | 31.5 | 29.1 | 27.4 | |
| beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.42 | 0.36 | <0.10 | <0.10 | <0.10 | |
| bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 6.37 | 9.35 | 0.37 | 0.41 | 0.35 | |
| boron | 7440-42-8 | E440 | 5.0 | mg/kg | 315 | 290 | 16.0 | 16.1 | 15.9 | |
| cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 10.6 | 10.8 | 0.720 | 0.642 | 0.835 | |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 136000 | 140000 | 6800 | 7060 | 7120 | |
| chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 233 | 196 | 10.1 | 8.07 | 7.83 | |
| cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 41.0 | 34.6 | 2.03 | 3.42 | 2.42 | |
| copper | 7440-50-8 | E440 | 0.50 | mg/kg | 3380 | 2300 | 557 | 522 | 267 | |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 67800 | 75900 | 3130 | 3590 | 3310 | |
| lead | 7439-92-1 | E440 | 0.50 | mg/kg | 724 | 436 | 161 | 281 | 40.0 | |
| lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 20.9 | 21.8 | <2.0 | <2.0 | <2.0 | |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 11300 | 11800 | 602 | 598 | 594 | |
| manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 1010 | 1050 | 48.9 | 63.4 | 47.5 | |
| mercury | 7439-97-6 | E510 | 0.0500 | mg/kg | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | |
| molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 40.6 | 44.8 | 1.92 | 1.84 | 1.64 | |
| nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 181 | 209 | 8.49 | 7.30 | 5.31 | |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 11100 | 13400 | 517 | 553 | 612 | |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | 5450 | 5230 | 280 | 280 | 280 | |
| selenium | 7782-49-2 | E440 | 0.20 | mg/kg | 0.30 | 0.35 | <0.20 | <0.20 | <0.20 | |
| silver | 7440-22-4 | E440 | 0.10 | mg/kg | 8.71 | 16.9 | 1.18 | 0.33 | 0.29 | |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | 15900 | 16600 | 836 | 808 | 825 | |
| strontium | 7440-24-6 | E440 | 0.50 | mg/kg | 360 | 324 | 15.4 | 16.6 | 17.8 | |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | 12900 | 13400 | <1000 | <1000 | <1000 | |
| thallium | 7440-28-0 | E440 | 0.050 | mg/kg | <0.050 | 0.054 | <0.050 | <0.050 | <0.050 | |



Analytical Results

| Sub-Matrix: Soil (Matrix: Soil) | | | | | Client sample ID | BA1949-A-6 | BA1949-A-7 | BA1949-A-8 | BA1949-A-9 | BA1949-A-10 |
|------------------------------------|------------|--------|-------|----------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-006 | VA19A0467-007 | VA19A0467-008 | VA19A0467-009 | VA19A0467-010 | |
| | | | | | Result | Result | Result | Result | Result | |
| Metals | | | | | | | | | | |
| tin | 7440-31-5 | E440 | 2.0 | mg/kg | 120 | 156 | 5.7 | 6.0 | 9.5 | |
| titanium | 7440-32-6 | E440 | 1.0 | mg/kg | 293 | 522 | 35.0 | 42.8 | 22.6 | |
| tungsten | 7440-33-7 | E440 | 0.50 | mg/kg | 22.4 | 13.5 | 0.54 | 0.77 | 0.55 | |
| uranium | 7440-61-1 | E440 | 0.050 | mg/kg | 5.72 | 5.64 | 0.265 | 0.296 | 0.273 | |
| vanadium | 7440-62-2 | E440 | 0.20 | mg/kg | 47.4 | 51.9 | 2.28 | 2.37 | 2.32 | |
| zinc | 7440-66-6 | E440 | 2.0 | mg/kg | 4200 | 4740 | 559 | 251 | 282 | |
| zirconium | 7440-67-7 | E440 | 1.0 | mg/kg | 2.0 | 4.1 | <1.0 | <1.0 | <1.0 | |
| TCLP Metals | | | | | | | | | | |
| pH, TCLP 1st preliminary | ---- | EPP444 | 0.010 | pH units | 11.3 | 11.4 | 11.4 | 11.4 | 11.4 | |
| pH, TCLP 2nd preliminary | ---- | EPP444 | 0.010 | pH units | 9.18 | 8.62 | 8.79 | 8.86 | 8.55 | |
| pH, TCLP extraction fluid initial | ---- | EPP444 | 0.010 | pH units | 2.88 | 2.88 | 2.88 | 2.88 | 2.88 | |
| pH, TCLP final | ---- | EPP444 | 0.010 | pH units | 6.02 | 6.02 | 6.14 | 5.68 | 6.04 | |

Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

| Sub-Matrix: Soil | | | | | Client sample ID | | | | |
|-----------------------------|------------|--------|--------|----------|----------------------|----------------------|-------|-------|-------|
| (Matrix: Soil) | | | | | BA1949-A-11 | BA1949-A-12 | ---- | ---- | ---- |
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | --- | --- | --- |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-011 | VA19A0467-012 | ----- | ----- | ----- |
| | | | | | Result | Result | --- | --- | --- |
| Physical Tests | | | | | | | | | |
| moisture | ---- | E144 | 0.25 | % | 21.6 | 21.9 | ---- | ---- | ---- |
| pH (1:2 soil:water) | ---- | E108 | 0.10 | pH units | 10.6 | 10.6 | ---- | ---- | ---- |
| Metals | | | | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | 2400 | 2030 | ---- | ---- | ---- |
| antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 6.15 | 6.31 | ---- | ---- | ---- |
| arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 1.12 | 1.37 | ---- | ---- | ---- |
| barium | 7440-39-3 | E440 | 0.50 | mg/kg | 28.1 | 27.8 | ---- | ---- | ---- |
| beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | <0.10 | <0.10 | ---- | ---- | ---- |
| bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 0.26 | 0.33 | ---- | ---- | ---- |
| boron | 7440-42-8 | E440 | 5.0 | mg/kg | 13.9 | 14.0 | ---- | ---- | ---- |
| cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 0.867 | 2.02 | ---- | ---- | ---- |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 6350 | 6860 | ---- | ---- | ---- |
| chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 14.6 | 9.72 | ---- | ---- | ---- |
| cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 1.22 | 2.75 | ---- | ---- | ---- |
| copper | 7440-50-8 | E440 | 0.50 | mg/kg | 168 | 503 | ---- | ---- | ---- |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 3440 | 4080 | ---- | ---- | ---- |
| lead | 7439-92-1 | E440 | 0.50 | mg/kg | 120 | 20.8 | ---- | ---- | ---- |
| lithium | 7439-93-2 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | ---- | ---- | ---- |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 541 | 593 | ---- | ---- | ---- |
| manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 58.8 | 53.6 | ---- | ---- | ---- |
| mercury | 7439-97-6 | E510 | 0.0500 | mg/kg | <0.0500 | <0.0500 | ---- | ---- | ---- |
| molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 1.82 | 1.68 | ---- | ---- | ---- |
| nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 6.93 | 6.29 | ---- | ---- | ---- |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 469 | 486 | ---- | ---- | ---- |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | 230 | 250 | ---- | ---- | ---- |
| selenium | 7782-49-2 | E440 | 0.20 | mg/kg | <0.20 | <0.20 | ---- | ---- | ---- |
| silver | 7440-22-4 | E440 | 0.10 | mg/kg | 0.23 | 0.37 | ---- | ---- | ---- |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | 733 | 789 | ---- | ---- | ---- |
| strontium | 7440-24-6 | E440 | 0.50 | mg/kg | 15.5 | 16.0 | ---- | ---- | ---- |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | <1000 | ---- | ---- | ---- |
| thallium | 7440-28-0 | E440 | 0.050 | mg/kg | <0.050 | <0.050 | ---- | ---- | ---- |



Analytical Results

| Sub-Matrix: Soil | | | | | Client sample ID | | | | |
|-----------------------------------|------------|--------|-------|----------|----------------------|----------------------|-------|-------|-------|
| (Matrix: Soil) | | | | | BA1949-A-11 | BA1949-A-12 | ---- | ---- | ---- |
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | --- | --- | --- |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-011 | VA19A0467-012 | ----- | ----- | ----- |
| | | | | | Result | Result | --- | --- | --- |
| Metals | | | | | | | | | |
| tin | 7440-31-5 | E440 | 2.0 | mg/kg | 4.7 | 7.4 | ---- | ---- | ---- |
| titanium | 7440-32-6 | E440 | 1.0 | mg/kg | 45.5 | 28.9 | ---- | ---- | ---- |
| tungsten | 7440-33-7 | E440 | 0.50 | mg/kg | 0.58 | <0.50 | ---- | ---- | ---- |
| uranium | 7440-61-1 | E440 | 0.050 | mg/kg | 0.244 | 0.260 | ---- | ---- | ---- |
| vanadium | 7440-62-2 | E440 | 0.20 | mg/kg | 2.17 | 2.12 | ---- | ---- | ---- |
| zinc | 7440-66-6 | E440 | 2.0 | mg/kg | 239 | 274 | ---- | ---- | ---- |
| zirconium | 7440-67-7 | E440 | 1.0 | mg/kg | <1.0 | <1.0 | ---- | ---- | ---- |
| TCLP Metals | | | | | | | | | |
| pH, TCLP 1st preliminary | ---- | EPP444 | 0.010 | pH units | 11.4 | 11.5 | ---- | ---- | ---- |
| pH, TCLP 2nd preliminary | ---- | EPP444 | 0.010 | pH units | 8.68 | 8.66 | ---- | ---- | ---- |
| pH, TCLP extraction fluid initial | ---- | EPP444 | 0.010 | pH units | 2.88 | 2.88 | ---- | ---- | ---- |
| pH, TCLP final | ---- | EPP444 | 0.010 | pH units | 6.10 | 6.09 | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

Sub-Matrix: TCLP Leachate

Client sample ID

(Matrix: Soil)

| | | | | | BA1949-A-1 | BA1949-A-2 | BA1949-A-3 | BA1949-A-4 | BA1949-A-5 |
|-----------------------------|------------|--------|--------|------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-001 | VA19A0467-002 | VA19A0467-003 | VA19A0467-004 | VA19A0467-005 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| antimony, TCLP | 7440-36-0 | E444 | 1.0 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| arsenic, TCLP | 7440-38-2 | E444 | 1.0 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| barium, TCLP | 7440-39-3 | E444 | 2.5 | mg/L | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 |
| beryllium, TCLP | 7440-41-7 | E444 | 0.025 | mg/L | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| boron, TCLP | 7440-42-8 | E444 | 0.50 | mg/L | 4.18 | 5.25 | 4.42 | 4.33 | 4.49 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.357 | 0.255 | 0.161 | 0.210 | 0.167 |
| calcium, TCLP | 7440-70-2 | E444 | 2.0 | mg/L | 2060 | 2380 | 2090 | 2000 | 2060 |
| chromium, TCLP | 7440-47-3 | E444 | 0.25 | mg/L | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| cobalt, TCLP | 7440-48-4 | E444 | 0.050 | mg/L | 0.705 | 0.655 | 0.459 | 1.61 | 0.639 |
| copper, TCLP | 7440-50-8 | E444 | 0.050 | mg/L | 1.09 | 1.56 | 1.16 | 1.30 | 1.00 |
| iron, TCLP | 7439-89-6 | E444 | 5.0 | mg/L | <5.0 | 5.0 | <5.0 | <5.0 | <5.0 |
| lead, TCLP | 7439-92-1 | E444 | 0.25 | mg/L | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| magnesium, TCLP | 7439-95-4 | E444 | 0.50 | mg/L | 124 | 153 | 135 | 128 | 136 |
| mercury, TCLP | 7439-97-6 | E512 | 0.0100 | mg/L | <0.0100 | <0.0100 | <0.0100 | <0.0100 | <0.0100 |
| nickel, TCLP | 7440-02-0 | E444 | 0.25 | mg/L | 0.49 | 0.69 | 0.51 | 0.56 | 0.45 |
| selenium, TCLP | 7782-49-2 | E444 | 1.00 | mg/L | <1.00 | <1.00 | <1.00 | <1.00 | <1.00 |
| silver, TCLP | 7440-22-4 | E444 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| thallium, TCLP | 7440-28-0 | E444 | 1.0 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| vanadium, TCLP | 7440-62-2 | E444 | 0.15 | mg/L | <0.15 | <0.15 | <0.15 | <0.15 | <0.15 |
| zinc, TCLP | 7440-66-6 | E444 | 0.50 | mg/L | 40.4 | 63.2 | 48.7 | 40.9 | 60.9 |

Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

Sub-Matrix: TCLP Leachate

Client sample ID

(Matrix: Soil)

| | | | | | BA1949-A-6 | BA1949-A-7 | BA1949-A-8 | BA1949-A-9 | BA1949-A-10 |
|-----------------------------|------------|--------|--------|------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Client sampling date / time | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-006 | VA19A0467-007 | VA19A0467-008 | VA19A0467-009 | VA19A0467-010 |
| | | | | | Result | Result | Result | Result | Result |
| TCLP Metals | | | | | | | | | |
| antimony, TCLP | 7440-36-0 | E444 | 1.0 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| arsenic, TCLP | 7440-38-2 | E444 | 1.0 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| barium, TCLP | 7440-39-3 | E444 | 2.5 | mg/L | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 |
| beryllium, TCLP | 7440-41-7 | E444 | 0.025 | mg/L | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| boron, TCLP | 7440-42-8 | E444 | 0.50 | mg/L | 4.22 | 4.09 | 4.33 | 5.88 | 4.66 |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.230 | 0.156 | 0.445 | 0.232 | 0.208 |
| calcium, TCLP | 7440-70-2 | E444 | 2.0 | mg/L | 1950 | 2010 | 1980 | 2190 | 2090 |
| chromium, TCLP | 7440-47-3 | E444 | 0.25 | mg/L | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| cobalt, TCLP | 7440-48-4 | E444 | 0.050 | mg/L | 0.605 | 0.648 | 0.359 | 0.524 | 0.947 |
| copper, TCLP | 7440-50-8 | E444 | 0.050 | mg/L | 1.86 | 1.37 | 0.652 | 0.984 | 1.48 |
| iron, TCLP | 7439-89-6 | E444 | 5.0 | mg/L | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| lead, TCLP | 7439-92-1 | E444 | 0.25 | mg/L | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| magnesium, TCLP | 7439-95-4 | E444 | 0.50 | mg/L | 133 | 127 | 134 | 139 | 137 |
| mercury, TCLP | 7439-97-6 | E512 | 0.0100 | mg/L | <0.0100 | <0.0100 | <0.0100 | <0.0100 | <0.0100 |
| nickel, TCLP | 7440-02-0 | E444 | 0.25 | mg/L | 0.45 | 0.60 | 0.59 | 0.62 | 0.48 |
| selenium, TCLP | 7782-49-2 | E444 | 1.00 | mg/L | <1.00 | <1.00 | <1.00 | <1.00 | <1.00 |
| silver, TCLP | 7440-22-4 | E444 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| thallium, TCLP | 7440-28-0 | E444 | 1.0 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| vanadium, TCLP | 7440-62-2 | E444 | 0.15 | mg/L | <0.15 | <0.15 | <0.15 | <0.15 | <0.15 |
| zinc, TCLP | 7440-66-6 | E444 | 0.50 | mg/L | 45.9 | 38.6 | 40.4 | 64.7 | 45.8 |

Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

Sub-Matrix: TCLP Leachate

Client sample ID

(Matrix: Soil)

| | | | | | BA1949-A-11 | BA1949-A-12 | ---- | ---- | ---- |
|--------------------|------------|--------|--------|------|----------------------|----------------------|-------|-------|-------|
| | | | | | 04-Dec-2019 09:00 | 04-Dec-2019 09:00 | --- | --- | --- |
| Analyte | CAS Number | Method | LOR | Unit | VA19A0467-011 | VA19A0467-012 | ----- | ----- | ----- |
| | | | | | Result | Result | --- | --- | --- |
| TCLP Metals | | | | | | | | | |
| antimony, TCLP | 7440-36-0 | E444 | 1.0 | mg/L | <1.0 | <1.0 | ---- | ---- | ---- |
| arsenic, TCLP | 7440-38-2 | E444 | 1.0 | mg/L | <1.0 | <1.0 | ---- | ---- | ---- |
| barium, TCLP | 7440-39-3 | E444 | 2.5 | mg/L | <2.5 | <2.5 | ---- | ---- | ---- |
| beryllium, TCLP | 7440-41-7 | E444 | 0.025 | mg/L | <0.025 | <0.025 | ---- | ---- | ---- |
| boron, TCLP | 7440-42-8 | E444 | 0.50 | mg/L | 4.24 | 4.37 | ---- | ---- | ---- |
| cadmium, TCLP | 7440-43-9 | E444 | 0.050 | mg/L | 0.177 | 0.198 | ---- | ---- | ---- |
| calcium, TCLP | 7440-70-2 | E444 | 2.0 | mg/L | 1900 | 2070 | ---- | ---- | ---- |
| chromium, TCLP | 7440-47-3 | E444 | 0.25 | mg/L | <0.25 | <0.25 | ---- | ---- | ---- |
| cobalt, TCLP | 7440-48-4 | E444 | 0.050 | mg/L | 0.460 | 0.538 | ---- | ---- | ---- |
| copper, TCLP | 7440-50-8 | E444 | 0.050 | mg/L | 1.16 | 0.834 | ---- | ---- | ---- |
| iron, TCLP | 7439-89-6 | E444 | 5.0 | mg/L | <5.0 | <5.0 | ---- | ---- | ---- |
| lead, TCLP | 7439-92-1 | E444 | 0.25 | mg/L | <0.25 | <0.25 | ---- | ---- | ---- |
| magnesium, TCLP | 7439-95-4 | E444 | 0.50 | mg/L | 129 | 134 | ---- | ---- | ---- |
| mercury, TCLP | 7439-97-6 | E512 | 0.0100 | mg/L | <0.0100 | <0.0100 | ---- | ---- | ---- |
| nickel, TCLP | 7440-02-0 | E444 | 0.25 | mg/L | 0.55 | 0.84 | ---- | ---- | ---- |
| selenium, TCLP | 7782-49-2 | E444 | 1.00 | mg/L | <1.00 | <1.00 | ---- | ---- | ---- |
| silver, TCLP | 7440-22-4 | E444 | 0.050 | mg/L | <0.050 | <0.050 | ---- | ---- | ---- |
| thallium, TCLP | 7440-28-0 | E444 | 1.0 | mg/L | <1.0 | <1.0 | ---- | ---- | ---- |
| vanadium, TCLP | 7440-62-2 | E444 | 0.15 | mg/L | <0.15 | <0.15 | ---- | ---- | ---- |
| zinc, TCLP | 7440-66-6 | E444 | 0.50 | mg/L | 48.8 | 41.0 | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.